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ABSTRACT

This document describes a project intended to: (1) render the description, assessment, and evaluation of adult education more relevant to administrators, politicans, and the general public; (2) quantitative and qualitative indicators of relevance to the evaluation of adult education in Sweden; and (3) make recommendations to the Swedish National Board of Education regarding appropriate procedures and methods for the monitoring of adult education on a regular basis. Part 1 summarizes a review of the literature on the definition of indicators applicable to the operation of a monitoring system for policy implementation processes in adult education, with particular reference to Sweden. Part 2 presents a theoretical framework comprising societal, institutional, and individual levels of analysis. Those levels are contrasted with program dimensions of adult education in terms of allocation, processes, and outcomes. Part 3 describes several techniques for measuring disparities in the utilization of adult education that correspond to the dimensions in the framework described in part 2. Part 4 presents examples of application areas, using statistical information to study equity relationships in Swedish adult education. The document contains 4 figures, 12 tables, and 151 references, some of which are in Swedish. (CML)

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Monitoring Adult Education

With Special Reference to Sweden

Albert Tuijnman

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MONITORING ADULT EDUCATION -

WITH SPECIAL REFERENCE TO SWEDEN

Albert Tuijnman

Institute of International Education
University of Stockholm

November 1987

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SUMMARY

Part 1 summarizes a review of the literature on the definition of indicators applicable to the operation of a monitoring system for policy implementation processes in the field of adult education, with particular reference to Sweden. In order to facilitate the identification and selection of domains for which indicators must be developed, Part 2 presents a theoretical framework comprising societal, institutional and individual levels of analysis. These are in turn contrasted with program dimensions of adult education in terms of allocation, processes, and outcomes. Part 3 describes several techniques for measuring disparities in adult education. These correspond to dimensions specified in the conceptual framework. Part 4 presents examples of application areas. This section uses actual statistical information to study equity relationships in Swedish adult education. Because Part 4 is intended to provide examples of the application of indicators to adult education, the analysis reported is necessarily incomplete.

ACKNOWLEDGEMENTS

The report is the first in a series of working papers forthcoming from the indicator project. In producing this report, the author worked closely together with the reference group appointed by the Swedish National Board of Education.

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Views and interpretations expressed in this document are those of the author and should not be attributed to the National Board of Education (Skolöverstyrelsen), its affiliated organizations, or to any individual acting on their behalf.

Albert Tuijnman
Stockholm
November 1987

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INTRODUCTION

Background of the Indicator Project

1.
Since the mid-1980s, the adult education division of the Swedish National Board of Education is responsible for the undertaking of a research project on the building, estimation and application of indicators to be used for the planning and evaluation of the more formal adult education sub-system.

2.
The purpose of the indicator project is not only to propose other means of collecting and using statistical information. Its major objective is to develop a framework of reference within which the formulation of principles for the future planning of education as well as the selection of relevant analytic tools for implementing evaluation and monitoring exercises can proceed meaningfully. The systematic assessment of information is considered a prerequisite for implementing and evaluating adult education policy.

Aims of the Indicator Project

3.
The aim of the project is to provide inputs into the contemporary discussion concerning alternative strategies for education policy in general and for active future oriented adult education policy in particular. Among the central aims of the project are:

- to render the description, assessment and the evaluation of the content, organization and utilization of adult education more relevant to administrators, politicians and the general public.

- to develop quantitative and qualitative indicators of relevance to the evaluation/monitoring of the effects of adult education.

- to make recommendations to the National Board of Education (SÖ) regarding appropriate procedures and methods for the monitoring of adult education on a regular basis.

Organization of the Report

4.
Part 1 summarizes a review of the literature on the definition of indicators applicable to the operation of a monitoring system for policy implementation in the field of adult education. In Part 2, a framework for the selection of indicators is proposed. Besides presenting indicators useful for the investigation of disparities in the utilizaton of adult education, Part 3 also discusses some techniques for estimating indicator values. Practical examples of such indicators are offered in Part 4.

PART 1

MONITORING ADULT EDUCATION: A LITERATURE REVIEW

Introduction

5.
The purpose of this part of the study is to define indicators and to describe their functions in the operation of a monitoring system for adult education. Indicators are regarded as representing basic units in theory building. Hence, a theoretical framework is proposed.

Origins of the Indicator Movement.

6.
The origin of the so-called "indicator movement" can be traced to about the mid-1960s. In 1965, U.S. Congress passed the Elementary and Secondary Education Act which provided funds for the improvement of educational programs and set forth requirements for their annual assessment. Concern with evaluation and with the development of indicators appropriate to quantitative assessment further augmented when, in 1966, Coleman and associates published their report on inequality, and extensively discussed its implications for equalizing educational opportunities (Coleman, 1966). At the same time, U.S. government agencies appointed Commissions to work on the design of a social accounting system which was to supply systematic data of relevance to the guidance of rational decision making (Fox, 1974).

7.
Whereas the indicators movement initially focussed on the further refinement of economic indicators, by the late 1960s, it came to emphasize the effort to develop indicators of relevance to all domains of social policy. As a result, demographers, sociologists and educators began to contribute with indicators of relevance to the monitoring of social change processes (Land, 1971; Wilcox et al. 1972; Land and Spilerman, 1974; de Solla Price, 1978; Rossi and Gilmartin, 1980; Miles, 1985). In its earlier manifestations, the term "social indicators" became a rallying point around which phrases as "social reporting", "social accounting", and "monitoring social change" found legitimation (Sheldon 1976). Indicators usually express something about the composition, structure or the functioning of a society by describing developmental processes in quantitative terms.

Defining Indicators

8.
Unesco (1969) initially defined an indicator as the phenomenon or variable whose presence and measurement quantum are crucial for a judgement on the effectiveness of a program in terms of specified criteria. According to Land (1975) indicators are statistics that are available in time series form over an extended period and can be cross-classified by additional characteristics of individuals,

social groups, institutions or nation states at large. Johnstone (1985) writes that a common definition of an indicator is that it "represents a quantity estimating aspects of a population in such a way that it makes a global comment about some characteristic of the population in addition to having the property of providing an estimate value which is independent of the size of the population being measured". Johnstone (1981: 2-11) mentions these characteristics of indicators: (a) they offer a general comment, (b) they are distinct from variables and statistics, (c) they represent a quantity, (d) their values are temporally expressed, and (e) they are basic units in theory development. Though indicators ought to be neutral in the comments they make on the education system, the interpreter (the politician or planner) must make clear normative judgement on the meaning of indicator values.

9.
As the use of indicators has grown, it has become common practice to draw distinctions between different types of indicators. Miles (1985: 60)) mentions direct and by-product indicators, input and output indicators, objective and subjective indicators, as well as system and aggregated indicators. On top of these, Johnstone (1981: 15) discusses representative, disaggragative and composite indicators. The U.S. Department of Education (1987) distinguishes between indicators of outcomes, resources and context.

Evaluation and Monitoring.

10.
Evaluation is often regarded as a form of social service based on scientific knowledge. It deals with validation, has identifiable clients, and attends to client- rather than discipline-oriented issues (Wolf 1987). Beeby (1977) regards evaluation as systematic collection and interpretation of evidence leading, as part of the process, to a judgement of value with a view to action. A central aspect of this definition is the determination of merit and worth by value judgement (House, 1980).

11.
Sack (1985) writes that monitoring refers to the continual tracking of an ongoing event under consideration. In a first instance, monitoring usually is less judgemental in nature than evaluation. It relates to the observation of an ongoing developmental process without targetting on the in-depth investigation of that process. From a simplified perspective, monitoring can be regarded as the activity of determining whether a situation falls within a "range of normality", or alternatively, outside the limits of tolerance. Monitoring results in comments about the general state of affairs of a program or policy, usually without passing information about the nature of the factors which may have caused that situation. A monitoring system links the indicators of an observed policy with factors outside its immediate sphere of influence with the aim of providing information about the implementation process. As such, monitoring seems functionally complementary to process evaluation (Chinapah and Fägerlind, 1986). Whereas monitoring applies to the tracking of policy implementation, process evaluation refers to a more detailed assessment of policy outcomes relative to goals and action processes.

Monitoring Adult Education

12.
The use of indicators for monitoring is more common in the formal sector of education than in the less formal sectors. There are a number of reasons for this. The first is the degree of diversification which characterizes adult education. Due to the voluntary nature of adult education, relevant and reliable data in terms of sampling, quantification, control and generalizability is hard to come by. Apart from difficulties arising from the invisibility of programs, incidental non-cooperation occurs. Because less formal programs are often financed through non-public sources to a large degree, they may be under less pressure to bring results out into the open. The lack of adequate tools for the monitoring of adult education partly results from the idea that activities of popular movements, employers and unions are to be seen as a primary good, not to be bothered with 'public' performance criteria.

13.
The monitoring of adult education over a longer time span informs those concerned about how the system is developing. Monitoring is an exercise closely related to the management of resource use and allocation in the public sector. It usually looks into a private program only if the program receives funding from public sources (Unesco, 1985). Monitoring requires the availability of a similar series of measures over time. Because the aim of the exercise is to offer a general comment about the normality or desirability of a given trend, monitoring is not a value free exercise. Although indicators for the monitoring of a policy or program are derived from a theoretical framework involving ideology and contradictory motives, the administrators or politicians have to pass normative judgement on the meaning of indicator values.

Uses of Indicators.

14.
Land (1975) mentions three uses of indicators - facilitating: (a) formulation of policy; (b) reporting of developmental processes; and (c) the growth of scientific knowledge. Carr-Hill et al., in their report prepared for Unesco (1985) write that indicators are crucial to education planning and management. In conjunction with well-ordered social statistics and scientific research indicators are instrumental to rational decision making. With regard to the diversified adult education sector, the initiation of a concerted effort to monitor programs across the boundaries of structure and function is important when managing the sub-system in pursuit of a balance between demand and supply of adult education.

15.
A monitoring system is set up to follow change in programs and in sectors at large. The first step in the development of meaningful indicators is to state the broad intent of a program. Monitoring then functions as a warning device to informed administrators. If monitoring involves the piecing together of information meant to provide warning signals, then the evaluation of cause and effect commences the moment the surveillance indicators suggest that the program ventures forth into unchartered territory outside defined limits of what is desirable or tolerable.

Information Needs.

16.
Information most useful for decision making may well be qualitative instead of quantitative (Psacharopoulos, 1980). In the sense used here, the terms qualitative and quantitative do not imply a 'scale of goodness' against which students, teachers, programs or entire education systems can be measured, rated and evaluated. In accordance with the description offered by Beeby (1969), the term 'qualitative' is stripped of evaluative connotation and refers to a description of change in an education system, other than change in size alone. The term 'quantitative' then refers to change with regard to the size (volume) of the education system.

17.
The selection of appropriate means of summarizing information for decision making is difficult. Measurement of indicators stands or falls with the availability and quality of available information. Pragmaticists contend that an inventory of available data must be made before an indicator network is designed. This approach could imply that indicators to be actually measured are those which are easily quantifiable. This may lead to the oversimplification of a complex social reality. Data are commonly collected for a purpose decided upon by government officials. Hence, if left entirely to the state, the scope of a monitoring exercise may well be limited to the assessment of expansion and efficiency.

18.
The development of an indicator network for the monitoring of the adult education sub-system encompasses a much wider range of data and assessment options. For instance, if the principal goal of an adult education program is to help participants in the process of furthering self-awareness, the gaining of confidence in own power and possibilities, or the stimulation of democratic perceptions, then performance and efficiency can only be assessed if data are available which cover the goals being aimed at. Due to its degree of differentiation, adult education depends for rational planning on statistics. Information available hardly suffices to offer the kind of basis required for rational decision making. Demands for information vary in response to change and the perceived need for change in or around the system. A network of indicators measuring inputs, processes and performance of adult education programs may contribute to survey demands for information, indicate areas for data collection, and serve as a sampling frame for research.

19.
Indicators are usually developed on the basis of data produced by the state. Even indicators dissiminated by international agencies commonly reprocess data initially produced by the domestic states (OECD, 1979). It is evident that the state, through possession of economic and legal power, is the prime supplier and user of data. A major source of data from which indicators can be developed is the population census. Other sources usually are the economic and social accounting reports, and yearbooks of statistics. Education indicators can be drawn from data furnished by the general school censuses. Carron and Châu (1981) classify these as indicators of expansion, indicators that comment upon its efficiency, and those measuring the the amount of available resources. In the sector of adult education, problems arise. Adult education is generally not included in the education census. Also, many programs are outside state spheres of political, economic and social command.

20.
The development, measurement and use of indicators should not be entirely left in the hands of a central goverment administration. Adult education is controllable through state intervention. Yet, in order to monitor an adult education sub-system as a whole data are needed in addition to those processed by state bureaucracies. For instance, with the incidental exception of one, possibly two, nordic states, a representative survey of the volume of personnel training is not readily available. An accounting system for adult education should be developed on the basis of a framework linking input-output matrices pertinent to state-managed as well as less-formal sectors of adult education.

21.
Feelings of uneasiness and uncertainty, and of outright antipathy in a minority of cases, with regard to the several uses to which normative indicators can be put, implies that the measurement and application of indicators, however value free of appearance, must be subject to some code of ethics similar to the one by which the scientific enterprise is bound.

PART II

THEORETICAL FRAMES FOR THE SELECTION OF INDICATORS

Introduction.

22.
The selection of indicators of relevance to the monitoring of the state of adult education is influenced by pragmatic, practical as well as ideological concerns. The criteria used for the selection of indicators should be derived from theoretical and ideological orientations and not primarily depend on the availability of data (Allardt, 1972). This section of the report proposes matrices for selecting indicators. Even though the matrices relate 'universal' variables or processes to adult education development, parameters within which the direction of cause and effect can be determined are not specified.

The Conceptual Framework

23.
Diagram 1 presents the conceptual framework. Hoppers (1985: 25), in a study of non-formal training in Zambia, identifies different levels of analysis. Conceptually, adult education can be studied from three relatively distinct angles: (i) a macro-level, dealing with the wider dimensions of society such as economy, demography, polity, or labor market; (ii) a micro-level relating to personal experience, perception and action; and (iii) the in-between level (henceforth called meso-level) focusing on the organizational and institutional contexts in which adult education programs operate.

24.
The macro-level refers to the (i) socio-cultural or demographic, (ii) the economic and (iii) the political dimension of the state. The meso-level refers to institutions such as those of education. Institutions derive their purpose, meaning and internal organization primarily from both ascribed and unstated particulars of the state. These ascribed functions both influence and are influenced by the internal dynamic of education characterized by its inputs, processes and outcomes. The micro-level refers to the life-span. In terms of life-span interaction, the human environment denotes a political, economic and cultural dimension, as well as peculiar attributes such as perceptions, value orientations, experiences, statuses and action.

25.
Fägerlind and Saha (1983) propose a dialectical model to explain relationships between society and education. The macro-meso relationship is seen as determined by the societal forces to which it eventually contributes. A paradox thus arises which can be solved only if education is regarded as a relatively autonomous or semi-seperate entity. Adult education, then, while forming an integral part of the dialectical forces which shape society, is regarded a product of these forces within the ramification set by historical conjunctions. Isling (1980) develops this model further by inserting, apart from a school level, also the level of social groups.

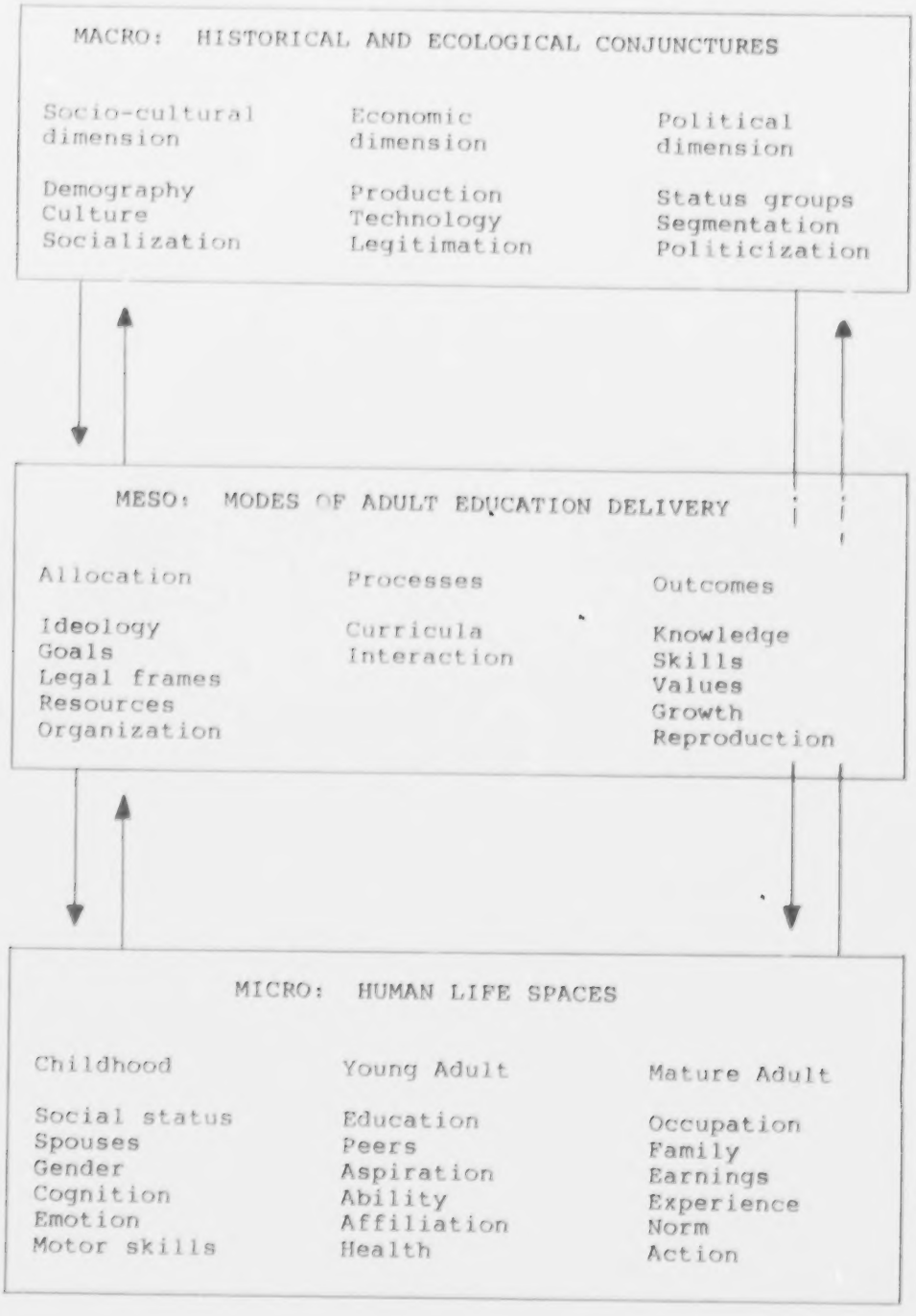

DIAGRAM 1: THE CONCEPTUAL FRAMEWORK

Through collective effort, social groups advance their interests and create for themselves an ideology as a means and goal. Events occurring in society are seen as ultimately dependent upon action and perception of individuals. Though individuals are socialized, they still possess the innate ability to influence development.

The Framework Specified

26.
Macro-meso interaction can be thought of as the interaction which takes place between adult education programs and the phenomena of social organization such as economic structures, interest groups, the workplace, modes of production, legal frameworks of the state and its population base. At the micro-level, life-spaces are seen as existing in a state of continual interaction with an education system as would occur in systems organized along recurrent lines.

27.
The distinction between so-called external relationships, that is relationships between the education system, the societal ecology, and the human environmment, are not the only ones relevant to the selection of indicators. Levin (1976) draws a distinction between (i) the education institution itself, (ii) the educative process, and (iii) the outcomes of education. It is helpful to distinguish between the input, process and output components of a system. For conceptual purposes the input component is sub-divided into these factors: ideology, goals, legal framework, resources and internal organization. The educative process is primarily characterized by curricula. Johnstone (1981) regards indicators of the output of a system as indicators relating the amount of a particular quantity or quality leaving the system to the amount of a similar kind of characteristic remaining in the sub-system or present in society.

Ideally, a model most useful for the development of an accounting system for adult education would depict input components (goals, ideology, legal frame, resources, internal organization), process components and major outcome components, seperately cross-classified by key-elements of social organization (demography, economy, polity, workplace) and decisive micro factors of human perception and action.

28.
It is assumed that interaction occurring between these components can be interpreted as the societal and individual expressions of needs, demands and aspirations with regard to the adult education sector. Also, it is assumed that adult education institutions, by virtue of very their existence, are characterized by some dynamic which internalizes ideology, goals and resources. Any institution tends to produce a climate of relative autonomy conductive to its internal ideology, codes and operation. The official discourse of adult education depends on the deployment of informal instances which may not be recognizable as a part of the sanctioned policy. If such were possible, an accounting system must pay attention to hidden or unstructured elements of discourse. These are referred to as the "noise of an education system" (Strömqvist, 1986).

29.
The outcomes of the adult education process have repercussions on the adult education institutions themselves. Effects also concern

society at large (economy, polity, labor market, culture) and the individual (experience, perception, action). At the macro level, the outcomes of adult education may relate to the reproduction of culture, the revitalization of manpower, the effectuation of production, the application of technology, the further segmentation of the labor market, the reinforcement of status groups, and the legitimation of prevailing ideology. At the micro level, effects of the adult education process concern cognitive traits, skills, job promotion and self-perceived quality of life. Adult education may qualify, socialize, politicize and 'activate' participants by transmitting, reproducing and furthering knowledge, norms, skills and ideology. Possible outcomes of the adult education process on society and the individual are discussed in Tuijnman (1986).

30.
Diagram 2 and Diagram 3 show an example of a possible way to deal with problems of conceptualization. Although the amount of detail such matrices allow to be superimposed on the framework is almost unlimited, it is nevertheless expected that the matrices may help to identify areas for which indicators must be developed. Diagram 2 shows the input dimension of societal allocation in relation to the institutional level of adult education. The socio-cultural or demographic, economic and political dimensions of the state are cross-classified by five allocation domains. In theory, each cell should be accounted for by one or more appropriate indicators. In practice this will not be an easy task. In a similar vein, adult education processes and outcomes will have to be examined in relation to principal societal dimensions, as well as in relation to the micro chain of human experience, perception and action.

	MACRO DIMENSIONS OF SOCIETY		
MESO:	Culture and Demography	Economy and Labor Market	Polity and Status Groups
Allocation: - ideology - goals - legal frames - resources - organization	Cell 1	Cell 2	Cell 3
Process: - curricula - materials	Cell 4	Cell 5	Cell 6
Outcomes: - societal: economic growth, revitalization of labor and culture, legitimation, etc	Cell 7	Cell 8	Cell 9

DIAGRAM 2: SOCIETAL ALLOCATION AND ADULT EDUCATION

31.
Diagram 3 describes the interaction between the education system and the human life-span. Though more phases can be included (for example early, mid and late career) the matrix denotes only three developmental phases and some of their principal characteristics: (i) childhood: ethnicity, sex, family background, ability, school environment etc; (ii) young adult: education, aspiration, values, family, affiliation etc; (iii) mature adult: occupation, earnings status, family, experience, participation etc.

	MICRO SPACES OF HUMAN PERCEPTION AND ACTION		
MESO:	Childhood	Young Adult	Mature Adult
Allocation: - ideology - goals - legal frames - resources - organization	Cell 1	Cell 2	Cell 3
Process: - curricula - materials	Cell 4	Cell 5	Cell 6
Outcomes: - individual: knowledge, skills, values, attitudes, qualification, socialization, politization etc	Cell 7	Cell 8	Cell 9

DIAGRAM 3: ADULT EDUCATION AND THE HUMAN LIFE-SPAN

Application of the Framework

32.
When applying this framework to the development of indicators for the monitoring of the state of affairs in the field of adult education, a first step would be to distinguish between the forms of adult education, both formal and less-formal, which are in operation. The second step involves the analysis of the particulars of each form of organization. Third, the foci of the programs should be investigated. The fourth step would be to list their principal audiences and available resources. Also, the particular needs of adult learners and the demands they make upon programs will have to be identified. Once these theory-based 'inventories' are made, appropriate indicators can be developed on the basis of statistical information.

33.
Because the field of adult education is characterized by a multiplicity of programs, ranging from formal to less-formal in terms of organization and content, the meso or institutional level must accomodate the entire spectrum of adult education programs. Forms of adult education in Sweden, such as municipal adult education (Komvux), basic education for adults (Grundvux), AMS labor market training (AMU), folk high schools, study circles, regular higher education, and personnel training, must be given treatment. Each program must be analyzed in the context of its peculiar cultural, economic and political history. In practice, this may imply that different indicators will have to be developed for the monitoring of the unique aspects of adult education programs.

34.
By way of summary Diagram 4 offers a matrix encompassing programs of adult education in relation to their input, process and output dimensions. Obviously, these forms of adult education cater for a specific audience, have evolved in response to a particular needs and demands, are governed by both hidden and sanctioned policies, are structured by dissimilar legal frames, draw resources from a unique mix of sources, and are characterized by types of internal organizations which fits in with the kind of role the institution is given to perform or has chosen to adopt. If indicators are to comment upon the processes and outcomes of adult education, then their design must be flexible enough to accomodate the deployment of different judgemental criteria. Opinions about which outcomes are desirable and which are not depend on personal predilections, allegiances and on the particulars of the adult education program in question.

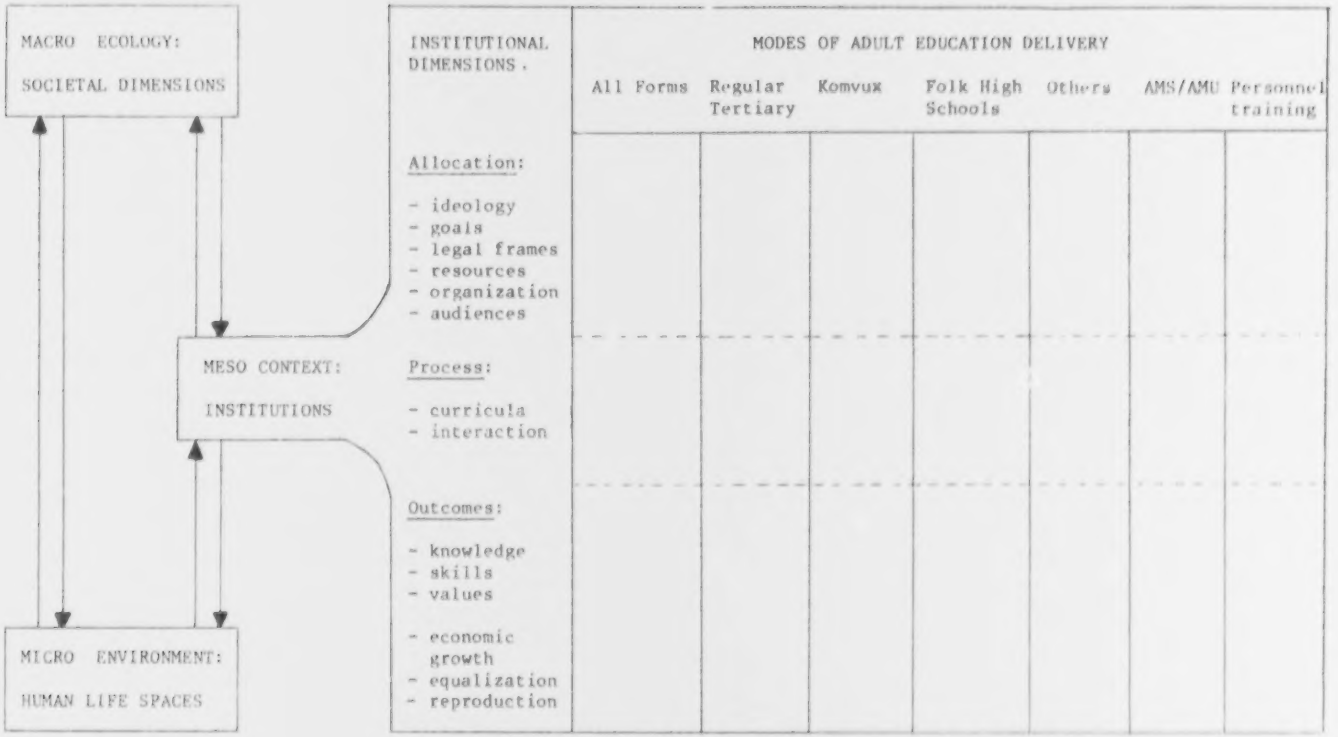

DIAGRAM 4: INPUT, PROCESS AND OUTPUT OF SWEDISH ADULT EDUCATION

PART III

INDICATORS OF EQUALITY IN ADULT EDUCATION.

Introduction

35.
This part of the study briefly discusses some selected indicators considered of relevance to the monitoring of adult education. The limitations are mainly two. First, the presentation concentrates on indicators of disparities in access and utilization. Numerous indicators are therefore not treated. An effort is made to accompany each introduced indicator with references to more elaborated treatments in the literature. A second limitation arises from the purposes for which the introduced indicators are to be used. This report is written for the adult education division of the Swedish National Board of Education. Proposed indicators should be easily constructable and interpretable. In this paper, the focus will be on equality.

Allocation to Adult Education

36.
According to the framework, indicators must be developed to cover dimensions of allocation to programs of adult education: ideology and goals, legal framework, resources, and internal organization. The allocation dimension must be viewed in relation to macro-meso interaction: indicators are needed to monitor the adult education sector in relation to demographic, economic and political trends.

37.
Demographic indicators can be derived from the population census: population size, distribution, geographic classification of residence, sex composition, age composition, ethnic composition, life tables, mortality, population change, marital characteristics and family composition (U.S. Bureau of the Census, 1980). Additional indicators could be derived from health and housing conditions of the population, or media consumption (SCB, 1987a and SCB, 1987b). Measures must be seen in relation to societal allocation to adult education. It is important to know approximately how the recruitment base for specific programs of adult education is developing. A problem with political indicators is that proposed measures are too general to cover ideology, legal frames and goal orientations toward forms of adult education. Indicators derived from data on voting behaviors, election participation, and conformity measures are inadequate. For monitoring in this domain to occur indicators are needed of state ideology and sanctioned policy.

38.
According to Unesco (1985) a thorough analysis of expenditures on education serves at least three purposes: to discover imbalances in the allocation of resources to the adult education sub-system, to examine factors responsible for increases in expenditures, and to identify yet unutilized resources. The monitoring of financial involvement in adult education requires estimates of both private and public funding.

39.
Numerous indicators measure the extent of individual and societal financial involvement in education. Among these are proportion of public expenditures devoted to education and percentage of growth aggregates such as GNP or GDP spent on education. Problems arise because it is difficult to estimate all monetary efforts which go to education. Especially hard to estimate are the costs incurred by employers in providing training. Attention must be paid to the social rates of return to economic investment in education. Indicators can be constructed by adapting production functions and by modifying some methods initially developed by econometricians for studying the elasticity of demand and supply. Apart from relating growth aggregates to educational expenditures, detailed attention must be paid to an investigation of the costs of adult education. Coombs and Hallak (1972) divide these into unit costs and program costs, broken down into capital and recurrent costs. Other costs concern direct expenditures and foregone earnings of the students in the system (Becker, 1968; Hettich, 1971; and Stoikov, 1975).

40.
There are at least three problems involved when investigating the extent of individual participation in adult education programs. A first relates to an analysis of initial access to adult education programs. The second concerns education processes and especially the transfer from a module to the next within the adult education program. The third problem of measurement has to do with the outcomes of a program. Investigation of the latter usually involves an analysis of the proportion of people who complete a program or cycle compared to those who discontinued their participation. The operation of a system for the monitoring of the state of affairs in the adult education sub-system requires accurate [illegible] enrolment. These indicators have to be sensitive to the [illegible] nature of participation in adult education.

41.
The framework specifies micro-meso interaction. The relationships between the life histories of individual persons (their life-span developmental phases, experiences, perceptions and actions), and adult education are less clear and thus more difficult to monitor than the relationships between allocation, processes and outcomes of adult education, and demographic and economic characteristics. Student characteristics must be seen in relation to the organizational structure of programs of adult education. It is important that "qualitative" characteristics (life histories, motivational orientations and expectations) are regarded in relation to input, processes and outcomes. "Static" student characteristics, such as social class, educational experiences, age, socioeconomic career, gender and earnings, should be included. Also indicators of study duration and number of courses attended must be used. Indicators must monitor trends with regard to staff composition, standard of facilities, availability of classes and study places, structural differentiation, specialization areas and electives.

42.
Among the most common indicators of adult education processes are those bearing on the practice of student flow analysis. These may come in several forms, such as the promotion ratio, the retention ratio, the repetition ratio, the drop-out ratio, and derivates of enrolment ratios. With regard to voluntary adult education, some of these ratios may not be applicable. Indicators of educational wastage, internal efficiency and cohort flows could contribute in

those instances where ratio analysis is considered inadequate. A second type of process indicators focus on curricula, the methods of teaching, and teacher-learner interaction.

43.
According to the framework a distinction must be made between the outcomes of adult education in relation to society, institutions, and participants. Indicators of the first kind estimate external efficiency, for instance, in terms of the production of graduates or successful program leavers as a proportion of those enrolling, but may also concern social rates of return, social selection and reproduction of inequalities. Indicators estimating institutional efficiency concern measures discussed earlier: retention ratios, transition ratios and drop out ratios. Output indicators relating to students can be sub-divided into two categories: these concern the short-term respectively long-term outcomes of adult education participation on the individual. Indicators of immediate outcomes are estimates of education's contribution to knowledge production

These are quantifiable through examining qualification outputs of programs or by comparing standardized achievement test scores. An indicator could estimate the degree of personal satisfaction with the performance of adult education programs. Keeves (1987) writes that four types of indicators are used in the area of educational research to provide the basis for comparisons with regard to the outputs of the system at the micro level. These are the retention ratios, achievement measures, yield measures and growth measures. Some examples of these can be found in recent publications of the U.S. Department of Education (1986 and 1987). An indicator of the output of adult education in a long term perspective is estimated by examining the contribution of programs to educational mobility on scales such as Unesco's classification of education.

Examples of Indicators

44.
In the paragraphs below a few indicators useful for analyzing and describing disparities in access and utilization of Swedish adult education are presented. Among the most powerful indicators used to describe amounts of variation in a data set are: (i) measures of distribution, (ii) measures of central tendency, and (iii) the measures of dispersion. Measures belonging to the first group are the percentage distribution, proportion and ratio. Among measures of central tendency are the arithmetic mean, median and percentile ranking scores. Measures of dispersion are the range, standard deviation and coefficients of variation. Blalock (1983) discusses each of these measures in detail. Other useful but highly complex methods for deriving indicator values, such as factorial analysis of variance, and correlation and regression analysis, will not be dealt with in this paper.

45.
Coefficient of Variation
The coefficient of variation presents measures of relative variability by dividing the standard deviation with the mean (Blalock, 1983). Johnstone (1981) offers a thorough discussion of problems frequently encountered when using the measure. The coefficient of variation (CV) is defined as:

$$C.V. = \frac{\text{standard deviation of the distribution of a quantity}}{\text{mean of the distribution of that same quantity}}$$

46.

Enrolment Rates

Several forms of enrolment rates exist. Most commonly, these are grouped into three categories: the crude enrolment rate, the net enrolment rate and the specific enrolment rate. A crude enrolment statistic is obtained by dividing the number of participants in a certain adult education program (for instance personnel training) by the entire population (in this case the adult population). The net enrolment rate is arrived at by dividing the number of participants in personnel training by the number of persons belonging to the labor force. A specific enrolment statistic is obtained by dividing the number of participants in personnel training by the number of eligible persons belonging to the effective labor force (minus unemployed, adjustment for seasonal labor differential and for certain labor segments such as persons on long-term leave of absense for sickness, maternity leave, etc). Of course, a further fine-tuning of these occurs. Related to the enrolment statistics described above are measures as the admission, promotion and drop out rates. Perhaps with the exception of the latter, the measures seem less applicable to the field of adult education.

47.

Utilization Indicator

Unesco (1985) discusses an indicator that measures the difference between the availability and utilization of adult education. This measure can be related to geographic region, locality or brackets of age groups.

$$U.I. = \frac{\text{enrolment rate for new enrolments by a given criterion}}{\text{completion rate for a program by the same criterion}}$$

48.

Indicators of Growth

Different measures of enrolment development over time are used in the literature. Apart from the absolute and relative growth rates Unesco (1984) offers a discussion of the calculation of enrolment trend indexes. Absolute growth rates are obtained by substracting the enrolment rate of year X -n from the rate of year X. Relative growth rates are arrived at by expressing enrolment rates in year X +1 as a percentage of enrolment in base year X. The trend index is calculated in case estimates are available covering a sequence of at least three points of measurement in time. The base year is given an index value of, for instance, 100. Other points in time for which estimates of relative growth are available are translated to correspond to this index.

49.

Net Participation Index

The net participation index constitutes another form of enrolment statistic. This index measures the net enrolment ratio per 10 000 individuals belonging to the eligible population. If the index is used to compare net enrolment between modes of adult education, a logit transformation is applied.

50.
Pyramid Index
The pyramid rate for a region in a country is the enrolment in an upper grade of a program as a percent of the enrolment in a first module of that cycle. When the district's pyramid rate is divided by the national pyramid rate, the pyramid index is obtained (Maas and Criel, 1983). The lower the pyramid rate in a given district, the greater its attrition rate in the upper grades of the program cycle. Pyramid rate analysis offers an appropriate means for examining variations in patterns of adult education utilization.

51.
Dissimilarity Index
The so-called 'index of dissimilarity' compares two distributions of percentages by stating what percentage of cases in one distribution would have to be brought over to other rubrics in order to yield identical solutions (Anderson, 1975).

52.
Representation Index
The representation index points out whether a given group or area is under- or overrepresented, and to what degree, with respect to the distribution of a scarce resource. For example, in the field of adult education, a certain group of lower white collar workers can be over- or underrepresented in a program if compared to the proportion of this group in the total population. In arithmetical terms, for any group which represents a sub-set of the population (Maas and Criel, 1982), the representation index is defined as:

$$R.I. = \frac{\text{percent of scarce resources (e.g. enrolment)}}{\text{percent of distribution basis (e.g. population)}}$$

53.
Selectivity Index
The so-called selectivity index is calculated in a manner similar to the one used to compute a representation index. The difference is that the selectivity index is applied in cases where categorical data are to be investigated, particularly in case information refers to attitudinal, aspirational, or motivational variables. A selectivity index is calculated by using logits to measure differences in a way which accounts for different stages in the spread of information (Husén, 1967 and Anderson, 1975). Logits transform proportions and percentage values to a form that is better suited to the analysis of diffusion. A logit of x percent is the natural logarithm of x divided by 100 - x.

54.
Gini Coefficient
Whereas the RI is a measure of the comparative disadvantage of an area or group relative to another, the Gini coefficient (GC) is a single statistic summarizing relative inequality across all areas or groups at once (Maas and Criel, 1983). The Gini coefficient is a statistic suitable for the study of the nature of distributions of a quantity relative to their proportion of the total (Nyström, 1983). The Gini coefficient is a measure of the degree of equitable distribution of a characteristic among the units of analysis under examination. A coefficient with a zero value indicates that the characteristic is evenly spread among the analysis units, and a Gini coefficient approaching a value of one indicates uneven or

unequal distribution due to the characteristicbeing clustered in very few of the analysis units (Ross, 1977). In other words, the range of possible Gini coefficients is from 0.0, representing the condition of absolute proportionality or equality, up to a value of 1,0 indicating complete monopoly or inequality (Maas and Criel 1983). The Gini coefficient is estimated as follows (Yamane 1973; Psacharopoulos and Woodhall, 1985; Silanda, 1987 forthcoming):

$$G.C. = \text{Summation } (Pi \cdot 1Qi-1) - (Pi \cdot 1Qi)$$

where Pi = cumulative proportion of a characteristic; and
Qi = cumulative proportion of the criterion variable

55.
Concentration Index
This index can be used for the monitoring of adult education when dispersions must be estimated in a distribution of values across a variable comprising mutually exclusive categories which form an ordinal or nominal scale (Unesco, 1985). The concentration index, of which many variations exist, is an indicator of the extent to which the provision of adult education is diversified. This index is computed by, for instance, combining the proportion of a total enrolled in some line of study with proportions enrolled in other lines of study. The nature of the combination depends on criteria derived from a stated policy with regard to the diversity of the curriculum in terms of subject matter offered. The concentration index is defined as:

$$C.I. = \text{Summation}_{i=1}^{k} (Pi)2$$

where Pi = proportion of total observations in the ith category
k = total number of categories

56.
Measure of Qualitative Variation
Homogeneity indicators are also referred to as a measure or index of qualitative variation (IQV). An index of qualitative variation is the total number of observed differences between categories of a variable expressed as the percentage of the maximum of possible differences (Mendenhall, Ott and Larson, 1974). The indicator can be used to examine, for instance, the composition of any group of participants in adult education programs with regard to selected background characteristics such as age, sex, social class etc. An index of qualitative variation can be obtained with the formula:

$$I.Q.V. = \frac{\text{total number of observed differences}}{\text{maximum number of possible differences}} \times 100$$

whereby the maximum number of possible differences is calculated as follows (Mendenhall et al., 1974):

$$P\ max = \frac{(N)^2 \ (1 - 1)}{21}$$

57.

Student Performance Indicators

According to Keeves (1987), in considering the different possible indexes associated with achievement outcomes, it is useful to distinguish between adjusted and non-adjusted measures. Adjusted measures have the advantage of giving information on performance after allowance has been made for the nature of the intake into a program of adult education. Among unadjusted measures of achievement are the norm-referenced test, the criterion-referenced tests and the so-called latent trait achievement scale. Among adjusted measures of achievement are regression adjustment, retention rate adjustment, mean performance of the most able students (upper ten percent, for instance), and the mean performance of the bottom 50 percent. Yield measures of achievement are composite indexes that take account of the distribution of students on achievement tests as well as the proportion of an age group engaged in the study of the subject under investigation (Husén, 1967; Keeves, 1987).

PART IV

EXAMPLES OF INDICATORS FOR STUDYING DISPARITIES IN ADULT EDUCATION

58.
This final part of the report uses some of the indicators earlier presented to describe disparities in the utilization of programs of adult education in Sweden on the basis of actual statistics.

Table 1

59.
Table 1 shows the distribution of levels of education by age for cohorts of the Swedish population in 1986. The data are presented in proportions (thousands) and percentages of the total. A major conclusion is that the distribution of levels of education seems to be a function of the age group to which cohorts belong. About 75 percent of the total of 1.2 million people in the age brackets 16 to 64 years who are recorded as having obtained the least number of years of formal education belong to the bracket 45 to 64.

Table 2 and Table 3

60.
Tables 2 and 3 demonstrate the use of indicators for the analysis of disparities in the utilization of Swedish adult education from 1975 to 1982/83. The value designation refers to numbers (1000s), percentage distributions, representation index, logit transformations and Gini coefficients. The data offered in the first column of Table 2 indicate the distribution of education (1000s) across the population aged 20-74; the second column shows the percentage distribution. The third column indicates the number of people (in thousands) belonging to the age group 18-74 who took part in some adult education program in the autumn of 1975. About 1.7 million of the total of 5.5 million individuals participated in some form of adult education in 1975. The values presented in fourth column show the distribution of participants by educational background. The percentage distributions are misleading, if not seen in relation to the actual size of these groups in the population. Column five therefore presents values which associate the proportions of participants with proportions of the total population. The resulting representation index suggests that the distribution of adult education participation is unequal. Gini coefficients with values of 0.25 are considered indicative of an unequitable distribution.

61.
If values reported in Table 3 are compared with those of Table 2, some observations can be made with regard to changes over time in the extent to which social groups, classified by education, take part in adult education. A comparison of the representation index and the enrolment rates calculated for 1975 and 1982/83 suggests that: Absolute enrolment has increased considerably (from 30. to 41.). Those with the highest level of educational attainment have augmented their share of total adult education participation more than any other group. This can be seen from the positive value of

the logit transformation (+.34). Data suggest that the under-educated received a fairer share of the total in 1982/83. The groups which received the least respectively the largest share increased their representation values whereas the groups closer to the mean took a reduced share. Their values decreased from 1.2 and 1.3 in 1975 to 1.0 and 1.1 in 1982/83. A comparison of Gini coefficients indicates that, on the whole, the distribution of adult education has become more equitable. The conclusion seems justified because the estimated value of 0.19 is closer to zero than 0.25 recorded for 1975.

Table 4

62.
Table 4 offers estimates of disparities in total adult education with regard to age and prior educational background. In Table 4, age cohorts are grouped into the brackets 25-34, 35-44 and 45-64. Educational attainment is measured on a four point scale adapted from the Swedish Classification of Education (SUN). This variable is also used in Tuijnman (1987). The data refer to participation in adult education in the year 1975 and 1982/83. The values point out that: With regard to the 25-34 age cohort, the distribution of adult education is more equal in 1982/83 than 1975. The cohort which initially had acquired the least formal education increased its representation from value .50 to .60. These estimates suggest that this group still is much underrepresented in adult education relative to the other groups. The group which acquired 9-10 years of education, as well as those who completed two years of upper-secondary education, were slightly more underrepresented in 1983 than 1975. With respect to the 25-34 age cohort the situation has become more equitable. The trend observed for the 25-34 cohort is very similar to the one recorded for the 35-44 cohort. The representation values calculated for these two groups meet the line of equality. That is, if their values would be plotted into a Lorenz curve, these would fall very close to the zero line. Improvements are also indicated by a Gini coefficient of 0.11, which under the circumstances can be considered a "tolerable" value. With regard to the bracket 45-64, the situation is different. For the groups with the least and highest level of education the 1983 values are less than the representation values estimated for 1975. Though it implies that the group with the highest level of formal education has come closer to the mean, it also indicates that the undereducated participated to a lessser extent in 1983 than in 1975. Gini coefficients obtained for the 45-64 age group show that enrolment in adult education has not become more equitably distributed.

Table 5

63.
In Table 5, another example is presented on how indicators can be used to examine disparities in access to adult education. Table 5 makes use of pyramid index analysis to compare total enrolment of age groups between two points in time. It can be seen that enrolment augmented between 1975 and 1984. The index also suggest that the education gap between generations is widening. Table 1 showed that the distribution of formal education seems to be a function of age. Table 5 indicates that younger cohorts, who obtained more formal education than elderly cohorts, also receive considerably more adult education. Thus Table 5 offers a basis for arguing the

case that adult education does not lessen but widen the education gap between generations.

Table 6

64.
Table 6 demonstrates the applicability of representation indices and Gini coefficients to the analysis of disparities in personnel training. The data pertain to both sexes, age 16-64, and refer to a one-year period from februari 1985 to 1986. On the basis of the values reported in Table 6, these observations seem warranted:
With respect to the distribution of non-participants in personnel training by prior educational background, the groups which either completed two years of upper-secondary or 9-10 years of education are close to the equality line. The group comprised of people who initially received the highest level of education is underrepresented and the bottom group overrepresented. The Gini coefficient of 0.06 indicates a relatively equal distribution. With regard to people who participated in personnel training for about 1-2 days, inequality is more pronounced. The categories comprised of undereducated and short-educated (9-10 years) people are much underrepresented (0.6 and 0.9). The group consisting of well-educated is much overrepresented (1.4). With regard to the last three columns respectively denoting personnel training lasting for 3-5 days, 6-31 days, and more than 1 month, the representation index indicate that inequality parameters increase in magnitude with an increase in the duration of the period of training obtained. Those who are undereducated progressively lag behind compared to those who have initially received more formal education. Gini coefficients found for the distribution of participants in personnel training across categories of initial educational attainment are alarmingly high. The conclusion seems justified that personnel education in Sweden operates on a discriminatory basis. Since training is the largest form of adult education measured in terms of the number of people participating, these findings generate doubt as to whether adult education may diminish education gaps between social groups.

Table 7

65.
Concern with a possibly negative impact of personnel training on the promotion of equity in the distribution of education between social groups appears justified on the basis of data presented in Table 7 as well. It shows the distribution of personnel training by sectors of the labor market. Table 7 suggests that there exist considerable inequality in the distribution of personnel training across labor market sectors. A major aspect of inequality is the one relating to gender differences. With the notable exception of the public administration employment sector women are underrepresented with regard to the extent and level of their participation in personnel training in all segments of the labor market. Women employed in public administration obtain an absolutely disproportionately large share of personnel education - that is, if compared to the part received by women in female-dominated segments of the labor market such as trades and postal services. It seems as if government services other than postal ones provide female workers with considerable training opportunities. In general though, women employed in jobs with lesser status and pay than men do not seem to benefit from personnel training as much as men do.

66.
The extent to which male workers take part in personnel training depends much on the labor segments in which they are employed. It is perhaps no surprise that workers in agriculture, energy and in housing and building construction are underrepresented. Striking is the extent to which employees in public administration as well as in general services are overrepresented. In conclusion, on the basis of the findings reported in Tables 6 and 7, it seems worthwhile to consider in which manner and to what effect an agreement can be generated between main interest groups on the labor market with regard to the implementation of policies aiming at a fairer distribution of opportunities to take part in personnel training between men and women and between labor market segments.

Table 8.

67.
Table 8 offers estimates on subject bias in the curricula applied by study associations across time. Three subject groups are used: (i) natural sciences, technology, mathematics, and medicin, (ii) the social sciences, humanities, economics, commerce and law, and (iii) arts, music, languages, and a rest group such as sports and home economics. Table 8 shows how the share of total provision of these subject groups changed from 1959/60 to 1984/85. During this period the typology of subjects used by Statistics Sweden changed a number of times. To the extent the data allow, care is taken to transform the information in accordance with the definition used since 1975. The upper columns indicate each category's percentage share of total provision. A general observation is that the share of the third "arts" category seems fairly stable at about 60 percent. Also, the percentage shares of the remaining categories are more or less constant over time. The logit transformations, which are forwarded in the lower case columns, present some alternative means of looking at the data. Though, for instance, in percentage terms the relative shares of the three subject groups appear stable, the results from the logit transformation procedure are more sensitive to changes that may have occurred.

Table 9 and Table 10

68.
Tables 9 and 10 present net participation indices of enrolment in municipal adult education (Komvux - Grundvux), folk high schools, universities (rescaled to 1975 standard of traditional university education), labor market training and personnel training for both sexes and by age. Enrolment statistics are provided at two points in time. The index is measured by calculating enrolment rates per 10 000 eligible population and by transforming results to natural logarithms. The net participation index is used to compare shares of enrolment across the sectors of the sub-system. Table 9 shows that enrolment in Komvux and Grundvux is more homogenous in terms of age distribution than the folk high schools. In Komvux, except the 55-64 age cohort, all age groups have a similar participation index value. Whereas enrolment in Grundvux has decreased it seems the other way round in folk high schools. Table 10 shows that the participation index is higher across all categories in 1984 than in 1975. Over the decade measured, personnel education appears to have exploded. Over the same period a decrease is observed in the index value computed for people belonging to the 55-64 age group.

Table 11 and Table 12.

69.
Tables 11 and 12 present data on inequality in the recruitment of entrants to traditional universities and colleges by social background. Table 11 offers representation indices of the proportions of entrants to tertiary education belonging to different classes. Table 12 provides Gini coefficients indicating how selection with regard to university entrance changed from 1952 to 1979. In spite of the university reforms carried out in the 1970s, the representation index estimated for group A is lower in 1979 than 1974. In 1974 it was again lower than in 1969. The trend seems to hold for groups B and C as well. The index computed for group A and B show a downward trend. In this case a trend which brings groups closer to the equality line. In relative terms, the differences between, on the one hand, groups A and B, and on the other groups C, D and E remain about similar. Although the index estimated for groups A and B are substantially lower in 1979 than in 1969, inequality is more pronounced in 1979 than in 1969 due to decreasing enrolments of students coming from the lower strata in society. In Table 12, the data indicate that class-bias in the selection of entrants to universities and colleges decreased from 1952 to 1969. From 1969 to 1974 the trend is reversed. Some improvement is recorded from 1974 to 1979. It is important to provide insight on how the trend is continuing into the 1980s.

Table 1.
Population by Level of Education and Age: Males and Females, Age 16 to 64, in 1986.
Numbers (in thousands) and Percentage Shares.

	UNDEREDUCATED Extremt kortutb < 9 år		SHORTEDUCATED Kortutb 9-10 år (motsv		UPPER SECONDARY Gymnasium 2 år (motsv)		WELL EDUCATED Minst 3 år gymnasium		OTHER EDUCATED Annan Utbildningsform		ROW TOTAL
	N	%	N	%	N	%	N	%	N	%	
16 - 19	23	1.9	275	20.4	110	11.2	39	2.4	16	17.5	463
20 - 24	8	0.6	127	9.4	233	23.7	218	13.3	9	10.2	595
25 - 29	14	1.1	137	10.1	173	17.5	226	13.8	9	10.5	558
30 - 34	26	2.1	158	11.7	128	13.0	256	15.7	9	9.5	577
35 - 39	97	7.9	175	12.9	105	10.7	262	16.0	8	8.9	646
40 - 44	158	12.9	149	11.0	86	8.8	231	14.1	10	11.1	634
45 - 49	177	14.4	94	7.0	49	5.0	148	9.0	8	9.4	476
50 - 54	201	16.4	82	6.1	38	3.9	98	6.0	8	8.6	426
55 - 59	239	19.5	76	5.6	31	3.2	87	5.3	6	6.9	440
60 - 64	284	23.2	78	5.7	29	3.0	71	4.4	6	7.1	469
TOTAL	1226	23.2	1350	25.5	984	18.6	1636	31.0	79	1.5	5294

Source: AKU Labor Market Survey 1986, See Tuijnman (1987)

Table 2.

Total Participation in Adult Education (Age Groups 18-74) by Formal Educational Background (Age Groups 20-74): Males and Females, in 1975. Numbers, Percentage Distribution, Representation Index, Logits transformations of Recruitment, and Gini Coefficients.

1975	Total Population Age 20-74 Thousands		Participation in Adult Educ All Forms		Representation Indices	Enrolment Rates	Logits of Participant Shares
	N	%	N	%			
< 9 Years of Education	2 392	43.4	359	21.5	0.495	15.01	- 1.734
9 or 10 Years of Education	1 284	23.3	458	27.5	1.180	35.67	- 0.589
2 Year Gymnasium or Equivalent	546	9.9	212	12.8	1.293	38.83	- 0.455
> 2 Year Gymnasium	1 289	23.4	637	38.2	1.632	49.08	- 0.037
Totals, Gini	5 511	100	1 666	100	.251 (Gini)	30.23	

Source: Calculated from data published in Ahlén et al. (DS U 1985: 10) and SCB (1979) Yearbook of Educational Statistics 1978.

Table 3.

Total Participation in Adult Education (Age Groups 18-74) by Formal Educational Background (Age Groups 20-74): Males and Females, in 1982/83. Numbers, Percentage Distribution, Representation Index, Logits of Recruitment and Gini Coefficients.

1982/83	Total Population Age 20-74 Thousands		Participation in Adult Educ All Forms				
	N	%	N	%			
< 9 Years of Education	1 692	30.2	360	15.7	0.520	21.28	- 1.308
9 or 10 Years of Education	1 384	24.6	572	25.1	1.020	41.33	- 0.350
2 Year Gymnasium or Equivalent	1 008	18.0	464	20.3	1.128	46.03	- 0.159
> 2 Years Gymnasium	1 524	27.2	890	38.9	1.430	58.40	+ 0.339
Totals, Gini Coefficients	5 608	100	2 286	100	.192 (Gini)	40.76	

Source: Calculated from data published in Ahlén et al. (DS U 1985: 10) and SCB (1986) Yearbook of Educational Statistics 1986.

Table 4.
Disparities in Total Adult Education Participation in Relation to Age Cohorts (25-64) and Educational Background. Representation Indexes and Gini Coefficients.

	Cohort 25 - 34		Cohort 35 - 44		Cohort 45 - 64	
	1975	1982/83	1975	1982/83	1975	1982/83
< 9 Years of Education	0.504	0.600	0.630	0.688	0.699	0.608
9 to 10 Years of Education	0.883	0.804	1.106	0.981	1.123	1.022
2 Year Gymnasium or Equivalent	0.950	0.933	1.089	1.000	1.093	1.163
> 2 Year Gymnasium	1.419	1.242	1.424	1.215	1.695	1.466
Gini Coefficients	.193	.115	.180	.106	.192	.194

Source: Calculated from data published in Olofsson and Rubenson (1985: 71); SCB (1983) Living Conditions: Education and Effects of Education, Report 35; and SCB (1982) Yearbook of Educational Statistics 1981.

Table 5.

Pyramid Ratios for Total Enrolments in Adult Education, All Forms: Males and Females Age 16-64, 1975 and 1984.

	Pyramid Ratios *)	
Age Cohorts	1975	1984
16 - 24	0.328	0.405
25 34	0.097	0.109
35 - 44	0.059	0.066
45 - 54	0.024	0.030
55 - 64	0.009	0.011

*) Excluding students in study circles, labor market education (AMU, AMS), personnel education and training, and students in state schools for adults. Net student totals.

Source: calculated from ULF data. SCB Yearbooks of Educational Statistics 1978 and 1986. Statistics Information Notes.

Table 6.

Total Labor Force Participation in Employer Sponsored Personnel Training by Formal Educational Background, Males and Females, Age 16 to 64. Representation Indices and Gini Coefficients.

	Non Participation in Personnel Educ	Participation 1 to 2 Days	Participation 3 to 5 Days	Participation 6 to 31 Days	Participation > 1 Month
< 9 Years of Education	1.136	0.589	0.561	0.477	0.262
9 to 10 Years of Education	1.054	0.854	0.775	0.733	0.879
2 Year Gymnasium or Equivalent	1.030	0.961	0.877	0.916	0.778
> 2 Year Gymnasium	0.863	1.382	1.504	1.563	1.676
Gini Coefficients	.058	.166	.203	.234	.280

Source: Estimated from data provided by Sundin (1987) Bakgrundsmaterial om Vuxenutbildningen, 1987: 1. Stockholm: Statistics Sweden.

Table 7.

Total Labor Force Participation in Employer-Sponsored Personnel Training by Sectors of Employment, Men and Women, Age 16 to 64, In 1986. Percentage Shares and Enrolment Rates.

		Percent Share Total Labor Force		Percent Share Total Participation		Enrolment Rates	
		Men	Women	Men	Women	Men	Women
A	Agriculture, Forestry, Fishery	5.70	2.60	3.60	0.01	0.63	0.04
B	Mining	0.00	0.00	0.00	0.00	----	----
C	Manufacturing	32.10	13.30	28.10	9.20	0.88	0.69
D	Energy, Water	1.50	0.01	3.00	0.01	2.00	1.00
E	Housing and Construction	10.50	1.10	5.60	0.10	0.53	0.09
F	Trade and Trade Services	13.10	15.10	12.20	10.50	0.93	0.70
G	Postal Services	9.60	4.20	9.30	5.40	0.97	1.29
H	Banking, Insurance	8.10	7.10	10.80	11.30	1.33	1.59
I	Public Administration, Services	19.40	56.40	27.20	63.20	1.40	1.12
	Totals, (Gini Coefficients)	100.00	99.81	99.80	99.72	(0.12)	(0.11)

Source: Calculated from data provided in Sundin (1987) Bakgrundsmaterial om vuxenutbildningen 1987: 1. Stockholm: Statistics Sweden.

Table 8. Changes in the Distribution of Subjects Taught by the Study Associations by Subject Groups, from 1959/60 to 1984/85. In percentages and logits transformations.

	1959/60	1964/65	1969/70	1975/76	1979/80	1984/85
Percentage Distribution						
I Natural Sciences, Medicin, Technical Subjects, and Mathematics	8.9	10.8	6.8	7.1	8.2	11.7
II Social Sciences, Economics, Humanities, Law, Commerce	30.7	27.9	34.4	28.3	29.3	28.5
III Arts, Music, Languages, Rest General Mixed	60.4	61.3	58.8	64.5	62.5	59.8
	100.0	100.0	100.0	100.0	100.0	100.0
Logits Transformations						
I Natural Sciences Bias	-2.33	-2.11	-2.62	-2.57	-2.42	-2.02
II Social Sciences Bias	-0.81	-0.95	-0.65	-0.93	-0.88	-0.92
III Cultural Bias	+0.42	+0.46	+0.36	+0.61	+0.51	+0.40

Source: Calculated from data provided by SOU 1961: 44, SOU 1977: 38; Yearbook of Educational Statistics, 1975, 1981 and 1986; and Statistics Information Notes (SM, SCB Örebro).

Table 9.

Net Participation Index (NPI) for Calculating Enrolment Disparities in Adult Education: Males and Females, Age Cohorts 16-64. Breakdown by Municipal Adult Education (KOMVUX), Primary Schooling for Adults (GRUNDVUX) and Folk High Schools, 1975 and 1984/85.

(NPI, logits tranformations)

	KOMVUX [1]			GRUNDVUX (EQUIVALENTS)			Folk High Schools [5]	
	1975	1984	1985	1975 [2]	1984 [3]	1985 [4]	1975	1984
16 - 24	6.17	5.75	5.89	3.61	3.83	3.50	4.42	4.35
25 - 34	5.81	5.66	5.78	4.54	4.40	3.95	3.13	3.52
35 - 44	5.59	5.50	5.74	4.76	4.32	3.59	2.39	2.74
45 - 54	4.87	4.78	5.15	4.03	3.61	3.37	1.50	1.82
55 - 64	4.10	3.53	3.94	3.21	2.27	2.73	0.74	0.92

Notes:
1) Net KOMVUX enrolments, excluding students at primary and lower secondary school level
2) Net KOMVUX enrolments, only students at primary and lower secondary school level
3) Net GRUNDVUX enrolments, only students at primary school level
4) Net KOMVUX enrolments, only students at lower secondary school level
5) Net Folk High School enrolments, only students in courses over 15 weeks duration

Sources: Calculated from ULF data, AKU survey data and IKVUX register data. SCB Yearbooks of Educational Statistics 1978 and 1986. Statistics Information Notes, and unpublished materials from Statistics Sweden, Örebro.

Table 10.
Net Participation Index (NPI) for Calculating Enrolment Disparities in Adult Education: Males and Females, Age Cohorts 16-64. Breakdown by Universities and Colleges, Labor Market Training and Employer Sponsored Personnel Education and Training, 1975 and 1984/86.

(NPI, logits transformations)

	Universities [1]		Labor Market training [2]		Employer Sponsored Personnel		
Age Cohorts	1975	1984	1975	1984	1975 [3]	1986 [4]	1986 [5]
16 - 24	6.17	6.60	4.10	4.33	3.35	5.31	4.75
25 - 34	5.94	6.32	3.62	4.36	2.86	6.14	5.53
35 - 44	4.81	5.52	3.35	3.70	2.26	6.26	5.18
45 - 54	3.78	4.69	2.80	3.01	2.05	5.91	4.52
55 - 64	2.82	3.25	1.89	1.03	1.13	5.00	3.41

Notes:
1) Net University enrolments, adjusted for differences in measurement
2) Net labor market training, excluding students in the regular educational system as well as those participating in employer sponsored training
3) Net participation in programs of more than 1 week duration
4) Net participation in programs of between 1 week and 1 month duration
5) Net participation in programs of more than 1 month duration

Sources: Calculated from ULF, AKU and AMS survey data. SCB Yearbooks of Educational Statistics, Statistics Information Notes.

Table 11.

Social Selection in the Entrance of New Students to Traditional Universities and Other Institutions of Higher Learning, Males and Females, until Age 22, in 1969, 1974 and 1979. Representation Indices and Gini Coefficients.

	Representation Indices		
Social Groups	1969	1974	1979
A	3.260	4.420	2.980
B	2.400	2.850	2.087
C	1.086	1.005	0.796
D	0.700	0.479	0.450
E	0.542	0.430	0.398
Gini Coefficients	.335	.443	.422

Source: Calculated from data provided by Härnqvist and Svensson (1980: 16) and SOU (1985, 57: 106-109). See also discussion in Gesser (1985: 185-192).

*) Social Group A comprises Higher-grade professionals, administrators and managers in large industrial establishments; Group B: Lower-grade professionals, administrators, managers and higher-grade technicians; Group C: Routine non-manual employees in administration and commerce, small proprietors; Group D: Farmers and smallholders; Group E: lower-grade technicians and blue collar workers.

Table 12.

Social Selection in the Entrance of New Students to Traditional Universities and Other Institutions of Higher Learning, Both Sexes, Until Age 21 or 22, in 1952, 1967, 1969, 1974, and 1979. Gini Coefficients.

University Enrolment by Social Class Background	Gini Coefficients
1952	0.586 [1]
1967	0.411 [1]
1969	0.335 [2]
1974	0.443 [2]
1979	0.422 [2]

1. Calculated from data provided by Gesser (1971: 143-59), Anderson (1975: 397) and Statistical Abstracts (SCB). See also data published in Härnqvist and Bengtsson (1976: 209-15) and Gesser (1985: 166). In 1952 and 1967, social class is measured on a 3 category scale: Social Class I, II and III. See explanation in Erikson (1976: 172) or in Erikson et al. (1983: 307).

2. Calculated from data provided by Härnqvist and Svensson (1980: 16) and SOU (1985, 57: 106-109). See also discussion in Gesser (1985: 185-92).
In 1969, 1974, and 1979, social class is measured on a 5 category scale: Social Groups A, B, C, D, and E. See explanation in Svensson (1981).

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